

PI 1177405

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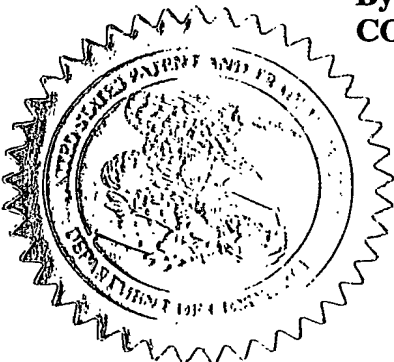
THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: 60/458,643

FILING DATE: March 28, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/09620

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03-31-03 60458643 .032803 2/1000

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PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).

DOCKET NUMBER: B01075.70040
Express Mail Label No. EV 208 517 808 US
Date of Deposit: March 28, 2003

03/28/03
60458643
J011 U.S. PTO

INVENTOR(S)/APPLICANT(S)

LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY)
Stevens-Wright	Debbie		North Andover, MA

☐ Additional inventors are being named on the separately numbered sheets attached hereto.

TITLE OF THE INVENTION (280 characters max)

METHOD AND APPARATUS FOR SELECTING TEMPERATURE/POWER SET POINTS IN ELECTROPHYSIOLOGY PROCEDURES

CORRESPONDENCE ADDRESS

CUSTOMER NUMBER:

23628

ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification - Number of Pages = 11

☐ Drawing(s) - Number of Sheets

☐ Application Data Sheet, See 37 CFR 1.76

☒ Return receipt postcard

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No

☐ Yes, the name of the U.S., Government Agency and the Government Contract Number are:

☐ Other:

METHOD OF PAYMENT (check all that apply)

☒ A check is enclosed to cover the Provisional Filing Fees.

☐ The Commissioner is hereby authorized to charge any additional fees or credit overpayment to Deposit Account 23/2825. A duplicate of this sheet is enclosed.

☐ Small Entity Status is claimed.

PROVISIONAL FILING FEE AMOUNT \$ 160.00

Respectfully submitted,

March 28, 2003
Date

James H. Morris, Reg. No. 34,681
Telephone No.: 617-720-3500

TITLE: Algorithm for determining target temperature

From Page No. 1

or target power or power control algorithm

Dependent

Depending upon the surface extension of electrode toward the boundaries of the ablation domain, the power requirements and the temperature sensing requirements will vary from electrode design. In addition, the flow conditions and proximity of the electrode to the tissue surface will affect these requirements. Traditionally, a single set point has been applied across varying flow conditions, geometries and tissue electrode gaps. The proposed computer model includes an algorithm in which the set point's (power or temperature) would depend upon:

Impedance
Tissue Gap
Flow

The impedance at the start of ablation is dependent upon the surface geometry of the electrode. The impedance increases the outer surface of the electrode extends towards the boundary of the ablation domain. Larger electrodes requiring more power and have lower impedances.

*Larger tissue gaps, preferable are beneficial at higher flows and smaller gaps beneficial at lower flows.

The difference between tissue temperature and electrode temperature increases with increasing flow. Therefore a given design will require a lower set point at higher flows.

Below is an example of how the FEA analyses can be used to predict the temperature setpoint for known impedance, electrode geometry, tissue gap, flow and flow.

To Page No. 2

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TITLE *Algebra - Temperature / Power Select*

TITLE

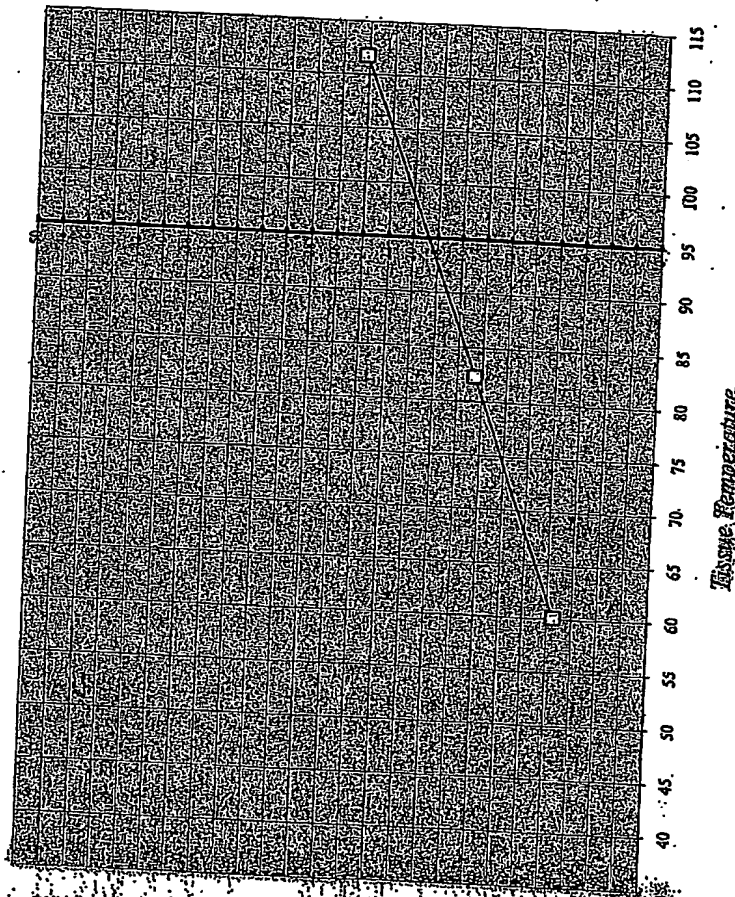
From 1

Fig 1

Temperature - Power Select

Temperature - Power Select

Algebra - Temperature / Power Select



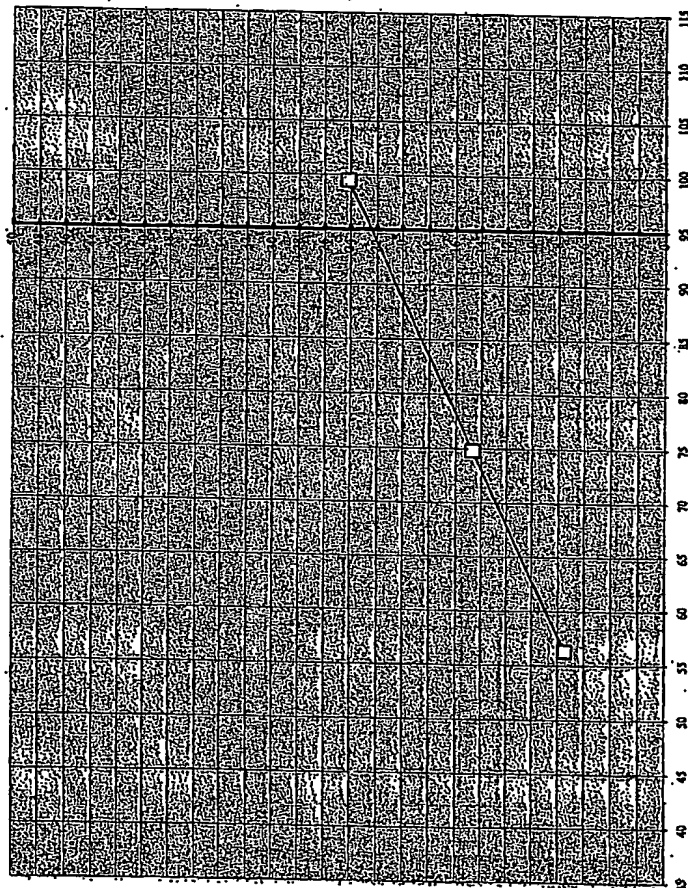
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TITLE *Algorithms for Temperature / Power Selection*

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SS-00-000

Power / Maximum Tissue Temperature
SD Min/Sec

Tissue Temperature

Algorithms for Temperature / Power Selection

Page No.

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TITLE *Plumation - Temperature Paper Sheet*

TITLE

From F

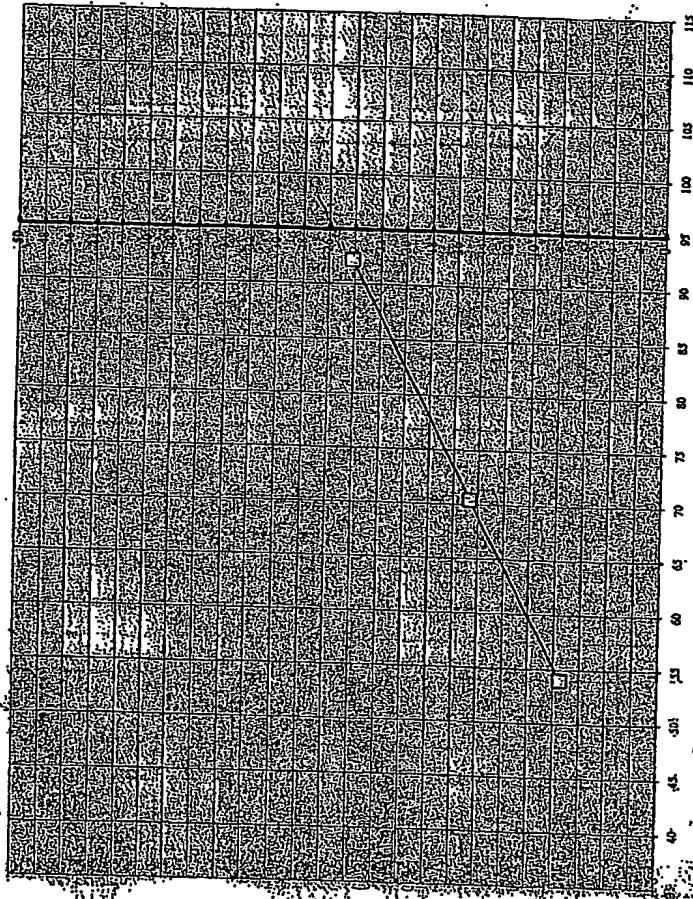
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From F

85

Plumation - Temperature Paper Sheet

Plumation - Temperature Paper Sheet

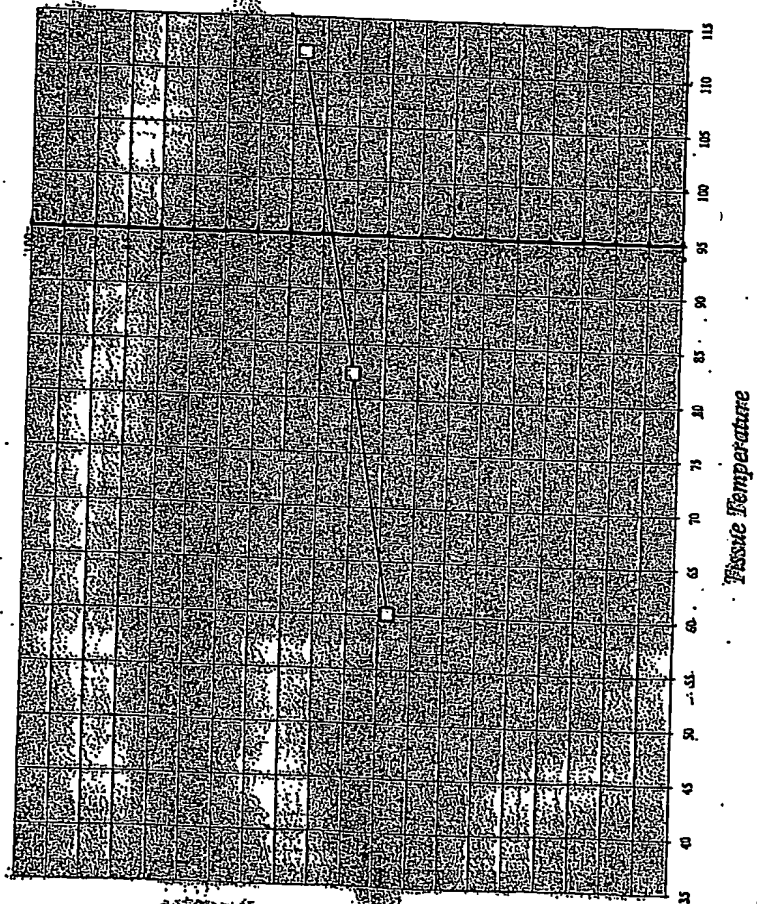


Plumation - Temperature Paper Sheet

Page No.

TITLE High Altitude - Temperature / Pine Crest

From Page No



Temperature: 25.5°C

Maximilian, Methode
Temperamente

No.:

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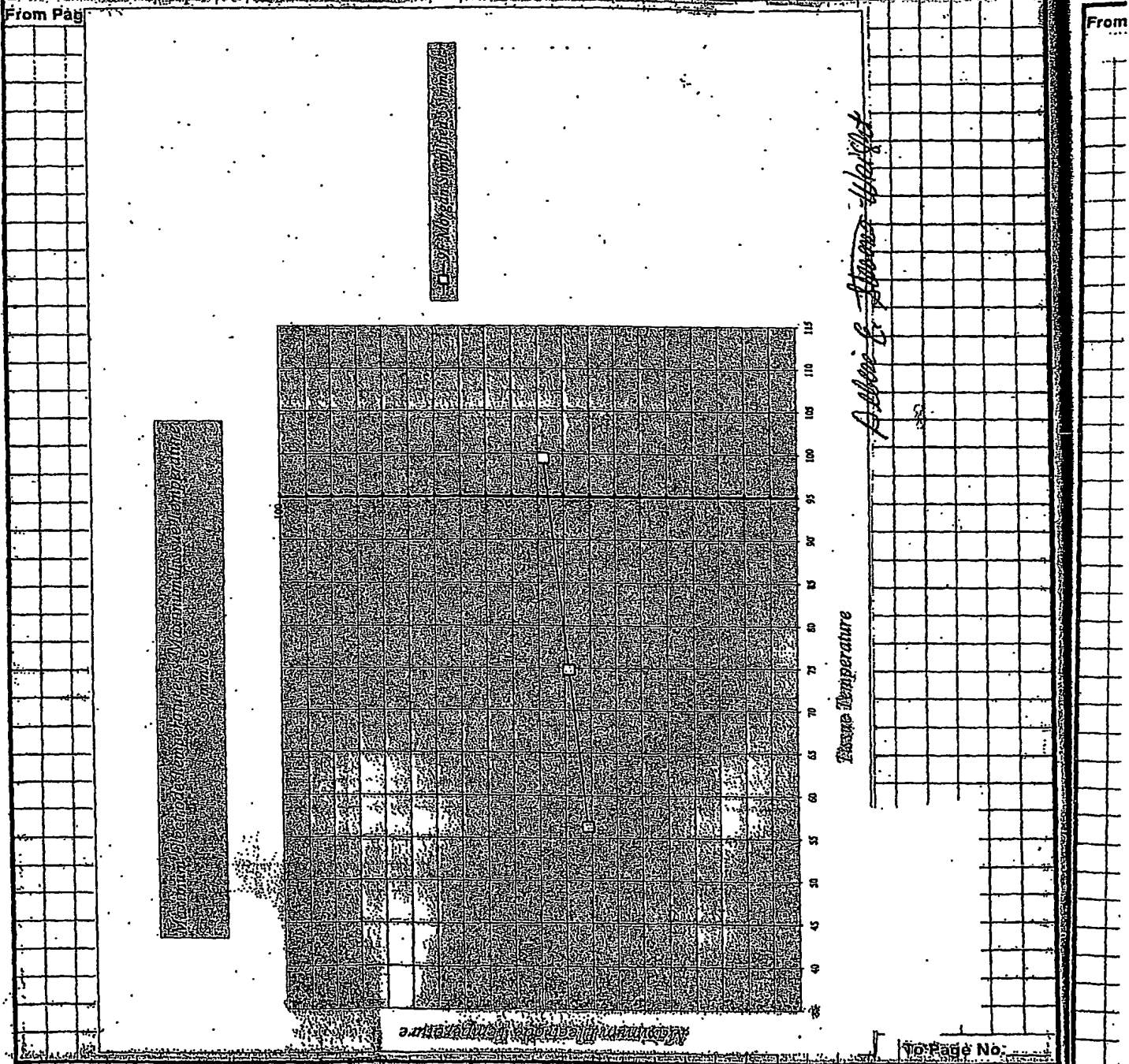
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TITLE *Algorithm - Temperature / Power Select*

TITL

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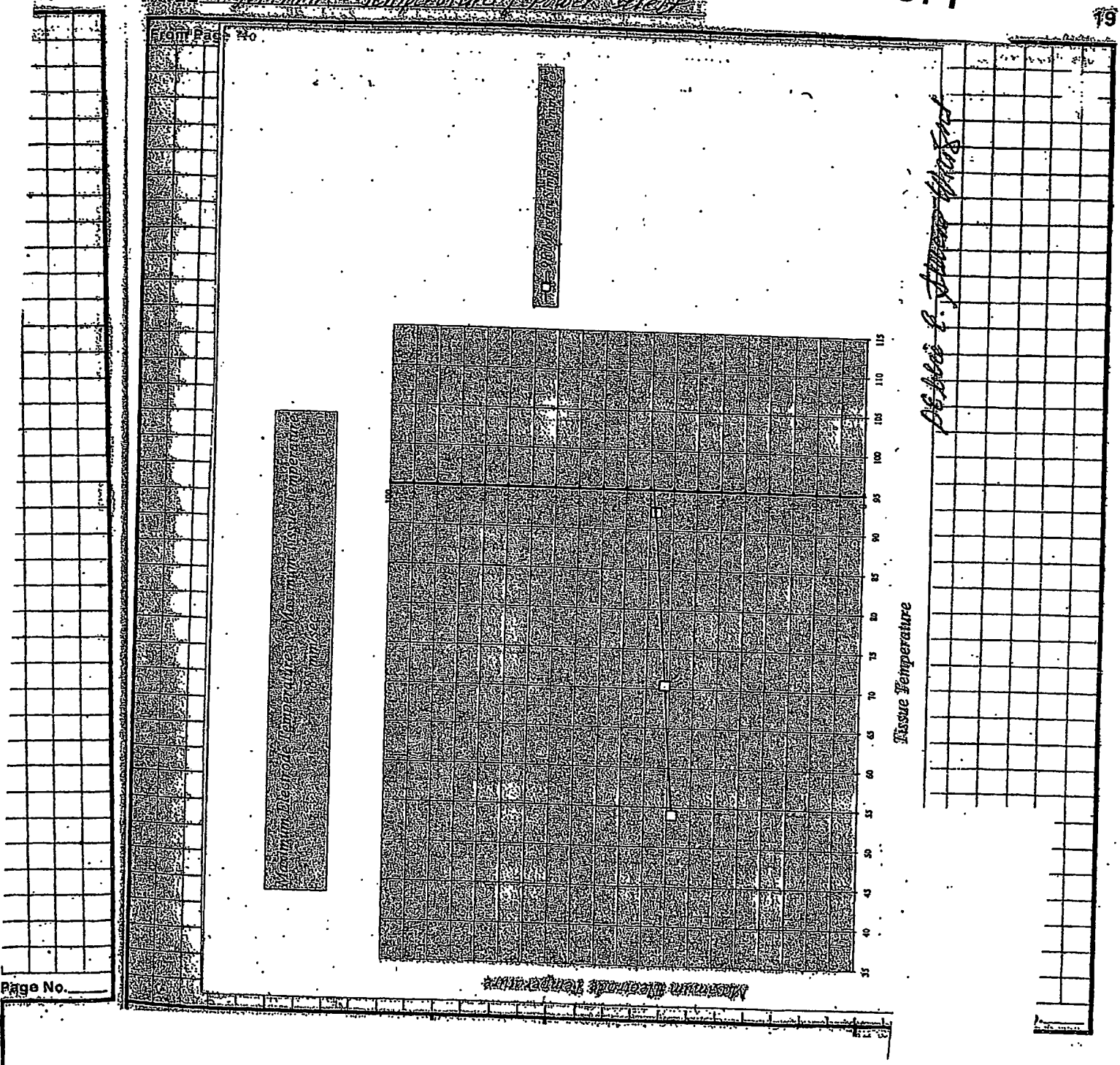
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TITLE: *Temperature of Power Cable*

Front Page 40



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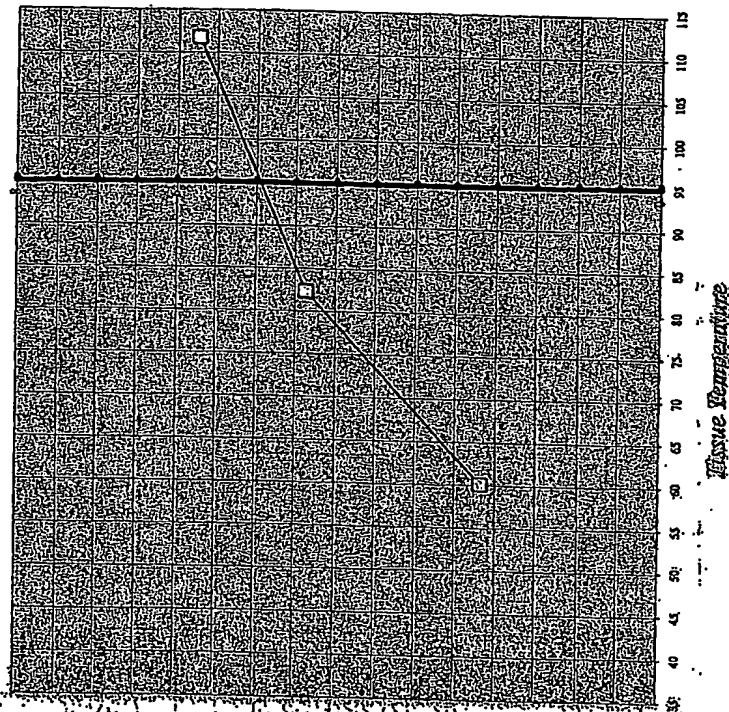
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TITLE: *Algorithms in Temperature / Power Select*

TITL

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From

*Algorithms in Temperature / Power Select*

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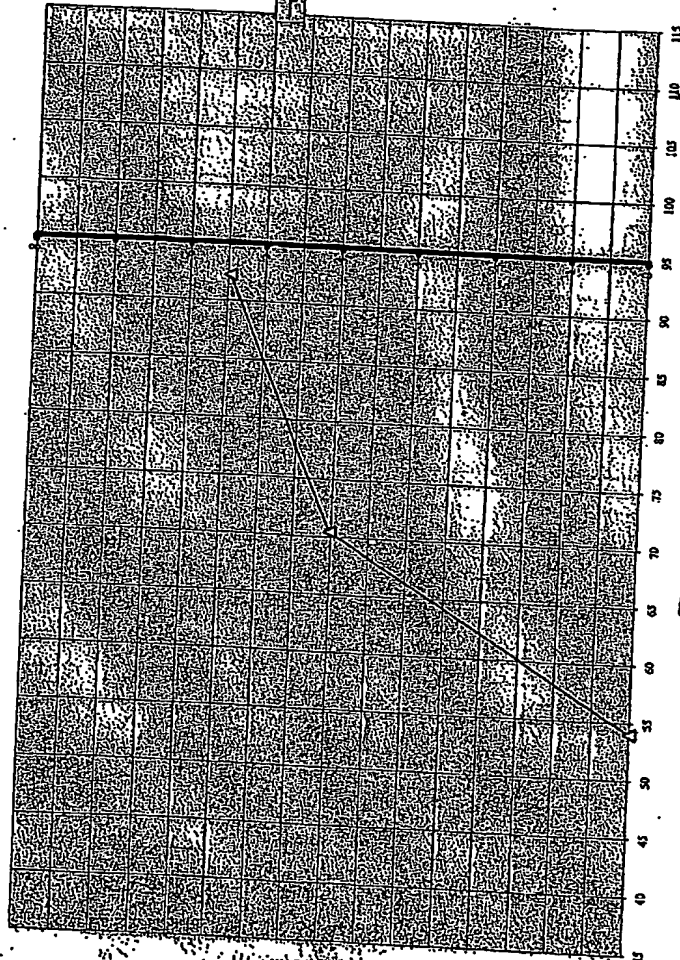
TITLE *Robert E. Algorithm - Temperature / Power*
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Fro

Maximum Temperature
65 mm/sec



Tissue Temperature

Robert E. Algorithm - Temperature / Power

Page No. _____

Wilkeson

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TITLE *Algorithm - Temperature / Power Selection*

From Page No. _____

Electrode - Ablation Prescription (Preliminary)					
Flow	Impedance	Tissue Gap	Temperature	Power Set	Expected Lesion
mm/sec	ohms	in.	Set Point °C	Point W	Generation mm
30	83	.009 Embedded	54.0	18.8	4.93
55	83	.009 Embedded	48.0	22.5	5.30
85	83	.009 Embedded	44.5	26.0	5.65

D. Allen E. Stevens - Wright

The preceding curves were generated from an FEA analysis where the applied potential was ranged at three flow rates (30mm/sec, 55mm/sec, 85 mm/sec). The maximum allowable tissue temperature was chosen to be below 95°C. The set points were taken from plots of (Power vs Maximum tissue temperature) and (Maximum electrode temperature vs Maximum tissue temperature).

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